CERT

What is Microsoft EMET and why should I care?

Report Documentation Page

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ROP Mitigations

EMET 4.0 provides application-specific ROP mitigations

- LoadLibrary
- MemProt
- Caller
- SimExecFlow
- StackPivot

LoadLibrary

Extra checking when loading a library.

- e.g.don’t allow loading from a UNC path

Memprot

Check memory protection functions like VirtualProtect to make sure they are not doing things like marking stack as executable.

Caller

Before critical API functions called, disassemble backwards to verify that target function is called.

- Don’t allow return into function (“Return” of ROP)

SimExecFlow

Forward execution simulation to verify normal program execution flow.

StackPivot

When entering a critical function, make sure that stack pointer is within bounds of the stack.

EMET 5.0 New Features

EMET 5.0 includes additional exploit mitigations

- Attack Surface Reduction
- EAF+
- Deep Hooks Enabled

Attack Surface Reduction

Reducing attack surface critical to prevention of exploitation.

Examples:

- Only allow Java in Intranet IE zone.
- Don’t allow Flash in Microsoft Word

EAF

Export Address Filtering

To perform useful functionality, shellcode usually needs to call exported functions.

e.g. `kernel32!WinExec()`

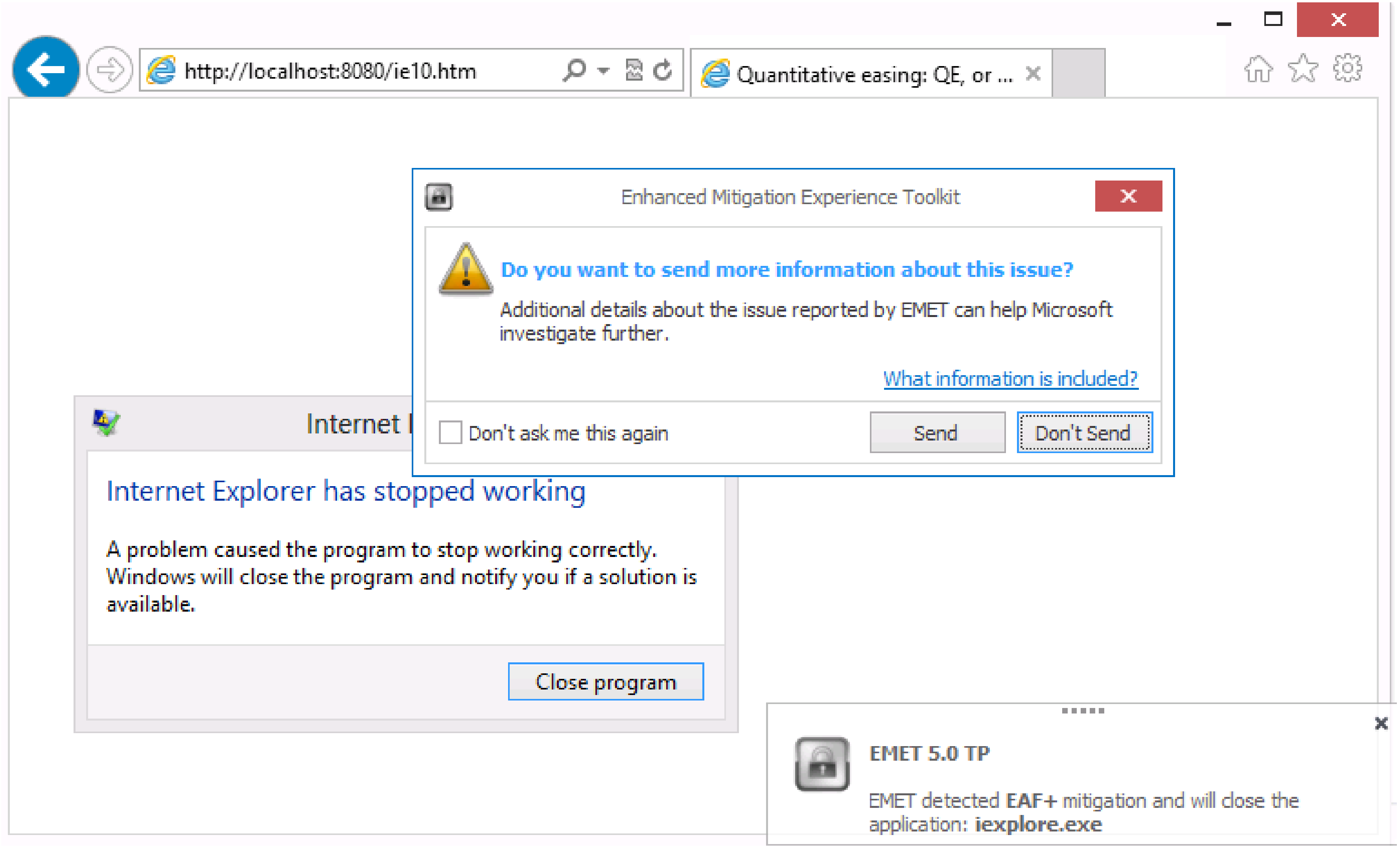
EAF blocks access to Export Address Table (EAT) based on calling address.

EAF+

Export Address Filtering +

- Added KERNELBASE export protection
- Integrity checks on stack registers and stack limits
- Prevent memory operations for export tables when they originate from suspicious modules.

EAF+ In Action



http://localhost:8080/ie10.htm
Quantitative easing: QE, or ...
Enhanced Mitigation Experience Toolkit
Internet

Do you want to send more information about this issue?

Additional details about the issue reported by EMET can help Microsoft investigate further.

What information is included?

□ Don't ask me this again

Internet Explorer has stopped working

A problem caused the program to stop working correctly. Windows will close the program and notify you if a solution is available.

EMET 5.0 TP

EMET detected **EAF+** mitigation and will close the application: **iexplore.exe**

Image Credit: http://blogs.technet.com/b/srd/archive/2014/02/25/announcing-emet-5-0-technical-preview.aspx

Deep hooks

Protection of high-level functions applied towards lower-level function as well.

Microsoft has been working with vendors to make sure to ensure deep hooks compatibility.

Use EMET to stay safe

The only way to safely run applications on Windows is to use EMET!

- Minimize risk of delayed patching
- Protect against known vulnerabilities
- Protect against 0day vulnerabilities
- Protect against future vulnerabilities

EMET Recommend Configuration

System Status

DEP	**Application Opt Out**
SEHOP	**Application Opt Out**
ASLR	**Always On***

Import **`Popular Software.xml`**

Add every application you care about

* Requires Registry Change

For More Information

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